

# AN EMPIRICAL STUDY ON CORRELATIONSHIP BETWEEN EVA AND MPS

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**Abstract:** It is important to measure the financial performance of company before invested in it. There are number of measurement parameters available to analyze the financial performance like Return on Investment (ROI), Earning per Share (EPS), Net Operating Profit After Tax (NOPAT), Stock Returns, Return on Equity (EOE) etc but which one measure the true value is questionable. EVA is an innovating financial tool which considers cost of capital and affect to shareholder's wealth and market price of share. Hence the present study has been made an attempt to measure the financial performance of Nifty 50 companies for the period of 2013 to 2017. The financial performance of companies has been analyzed through Economic Value Added (EVA). The corollation between Economic Value Added (EVA) and Market Price of Share (MPS) shows that there was no consistent relationship between two measurement parameters during the period of study.

**Keywords:** Correlation, Economic value added, Market price of share

## Introduction of EVA:

EVA is a value based financial performance measure, an investment decision tool and a performance measure reflecting the absolute amount of shareholder value created. It is computed as the product of the "excess return" made on an investment or investments and the capital invested in that investment or investments.

EVA is the net operating profit minus an appropriate charge for the opportunity cost of all capital invested in an enterprise or project. It is an estimate of true economic profit, or the amount by which earnings exceed or fall short of the required minimum rate of return investors could get by investing in other securities of comparable risk (Stewart, 1990).

EVA is not new. Residual income, an accounting performance measure, is defined to be operating profit with a capital charge subtracted. Thus, EVA is a variant of residual income, with adjustments to how one calculates income and capital.

Stern Stewart & Co, a consulting firm based in New York, introduced the concept of EVA as a measurement tool in 1989, and trademarked it. The EVA concept is often called Economic Profit (EP) to avoid problems caused by the trade marking.

However, in the 1990's, the creation of shareholder value has become recognized as the ultimate economic purpose of a corporation. Firms focus on building, operating and harvesting new businesses and/or products that will provide a greater return than the firm's cost of capital, thus ensuring maximization of shareholder value.

EVA is a strategy formulation and a financial performance management tool that helps companies make a return greater than the firm's cost of capital. Firms adopt this concept to track their financial position and to guide management decisions regarding resource allocation, capital budgeting and acquisition analysis.

Fortune Magazine annually publishes a list of top companies complete with and EVA numbers and rankings, crediting the measures for the creation (or destruction) of shareholder wealth.

In effect, it estimates the economic profit (or loss) of a company's operations. Traditional accounting measures such as EPS and ROA measure economic performance, but ignore the cost of the capital. Including the cost of capital, as EVA does, reveals whether any economic value was created. This forces the management to focus on managing the company's assets as well as creating income.

How does EVA promote shareholder interests? First, it clearly specifies to management that the primary financial objective of the company is to create shareholder wealth. Secondly, it emphasizes continuous improvement in the company's EVA as the basis for increased shareholder wealth. Assuming the efficient market hypothesis holds, stock price reflects the company's current performance; therefore, the level of EVA isn't important, but changes in that level are. Management focus on these two issues can result in dramatically increasing EVA.

## Review of Literature

The choice of performance measures is one of the most critical challenges facing organisations (Knight, 1998). Poorly chosen performance measures routinely create the wrong signals for managers, leading to poor decisions and undesirable results. There are enormous hidden costs in misused performance measures. Shareholders pay the bill each day in the form of overinvestment and acquisitions that do not pay of etc. It is not that management is poor. Simply, it is the wrongly chosen

performance measures, which in turn push management to take improper decisions (Ferguson and Leistikow, 1998; Knight, 1998).

Over the last few years an increasing number of consultants, corporate executives, institutional investors and scholars have taken part in the debate on the most appropriate way to measure performance (Rappaport, 1998). Consultants are willing to demonstrate the mastery of their recommended performance models. Corporate executives show clearly that the performance models adopted by their corporations are the most appropriate and successful. Institutional investors debate the advantages of alternative performance models for screening underperforming companies in their portfolios. Finally, scholars develop performance measurement models and test the extent to which existing performance evaluation and incentive compensation systems inspire management decisions and performance itself (Rappaport, 1998).

However, during the last two decades it was widely argued (Rappaport, 1986; 1998; Stewart, 1991; 1999) that most of the performance measurement systems failed to capture and encourage a corporation's strategy, producing mostly poor information leading to wrong decisions. Knight (1998), in an attempt to explain why traditional performance measures were so misused, asserted that part of the answer lies in three myths surrounding performance measurement, which are: growing quarterly EPS is all that matters, accounting measures tell the whole story, and that you can manage anything only with financial reporting methods. These myths are all based on the common belief that accounting is the only means of measuring performance. He then discussed the shortcomings of these three myths and suggested that value-based performance measures such as EVA and SVA, among others, could be considered as alternative options to measure a corporation's financial performance.

Value-based management approach, based mainly on NPV techniques, FCF, and cost of capital, has as its main objective the maximization of shareholder value. In recent years, SHV approach and VBM became particularly popular both as a decision making tool and as an incentive compensation system as well. Thus, value-based performance measures, such as EVA, MVA, SVA, CFROI, EP, CVA, and Economic Value Management (EVM) have spread all over Europe gaining acceptance by many companies.

Moreover, many shareholder value proponents such as Rappaport (1986; 1998), Stewart (1991; 1999), Stern, Stewart and Chew (1995), Ehrbar (1998), Knight (1998), and Stern (1974; 2001) have strongly criticized earnings since they fail to measure changes in the economic value of a company. Their critique was mainly based on three reasons: alternative accounting methods may be employed to calculate earnings, investment requirements are excluded from earnings calculation, and the time value for money is ignored in earnings calculation.

### The EVA Financial Management System

EVA is considered as the centerpiece of a completely integrated financial framework for financial management and incentive compensation (Stewart, 1994; Stern, Stewart and Chew, 1995). It is a technique for value creation measurement and has been developed and trademarked by the New York consultant group Stern Stewart & Co. (Stern, 1985; Stewart 1991). Stern Stewart & Co. (established by Joel Stern and Bennett Stewart), promoted the EVA technique not only as a simple performance measure but as an integrated Financial Management System as well, which associates the value creation with incentive compensations (Stewart 1991; 1994; 1999; Stern, Stewart and Chew, 1995; Ehrbar 1998).

EVA is calculated as the product of the economic book value of the capital committed to the business multiplied by the spread between the rate of return on capital, defined as  $r$ , and the cost of capital, defined as  $c^*$  (Stewart, 1991). Therefore, the formula for EVA calculation becomes as follows:

$$EVA = (r - c^*) \times \text{capital} \quad (2-1) \text{ or}$$

$$EVA = (\text{rate of return} - \text{cost of capital}) \times \text{capital} \quad (2-2)$$

Where  $r$  is the rate of return, and  $c^*$  is the cost of capital, or more correctly stated, the WACC.

The rate of return,  $r$ , is computed by dividing a company's NOPAT by the total  $I$  employed in operations:

$$r = \text{Capital}/\text{NOPAT} \quad (2-3)$$

According to Stewart (1991; 1999) the rate of return measures the productivity of capital employed without taking into consideration the method of financing, and it is free from accounting distortions that arise from accrual bookkeeping entries, from the conservative bias in accounting statements, and from the tendency to understate capital by writing off unsuccessful efforts. It may be compared directly to the company's overall cost of capital employed and therefore it is able to indicate whether value has been created or destroyed. Stern Stewart & Co. has proposed up to 164 adjustments in order to eliminate financing distortions in a company's NOPAT and Capital (Stewart, 1991; 1994; 1999).

Rearranging equation (2-1), EVA becomes:  $EVA = (r \times \text{capital}) - (c^* \times \text{capital})$  and rearranging equation (2-3), NOPAT becomes:  $\text{NOPAT} = r \times \text{capital}$  Thus, replacing the  $(r \times \text{capital})$  in equation (2-1) with NOPAT, EVA becomes:

$$EVA = \text{NOPAT} - (c^* \times \text{capital}) \quad (2-4)$$

Where NOPAT is operating profits and ( $c \times X$  capital) is the capital charge. Therefore, we can define EVA as operating profits less a capital charge.

EVA is based on accounting items such as net income, interest bearing debt differs to the degree that it includes the cost of capital in its calculation. Additionally, Stewart and capital. Compared to the other traditional accounting measures, EVA (1991, p. 3) argued that 'algebraically EVA produces the same results in valuation as DCF or NPV', valuation methods that are widely accepted as the theoretically best valuation mechanisms from the shareholders' point of view (Miller and Modigliani, 1961; Stern, 1974; Gordon, 1962). DCF and NPV take into account the time value for money, use the opportunity cost of equity capital and moreover, they do not suffer from any sort of distortions caused from accounting. However, since they are alone in being based on forecasted cash flows, they do not match in performance evaluation, while EVA seems to fit quite satisfactorily in measuring the performance (Stewart, 1999).

### **The Introduction of EVA in Corporate World**

In 1991, Stern Stewart & Co. revised the computation of Residual Income (RI) through a series of accounting adjustments and the result was the trademarked variant of RI, the EVA. They recommended EVA as a measure that could be used instead of earnings or cash from operations in order to capture both internal and external performance. Stewart (1991, p. 66) as a principal advocate of EVA argued: Earnings, earnings per share and earnings growth are misleading measures of corporate performance. Earnings are diminished by bookkeeping entries that have nothing to do with recurring cash flow, and are charged with such value-building capital outlay as R&D, all in an attempt to placate lenders' desires to assess liquidation value. EPS at best measures only the quantity of earnings, but the quality of earnings reflected in the P/E matters too'.

Many other important studies contributed to the increasing interest in EVA. For example, Peterson and Peterson (1996) and Copeland, Koller and Murrin (1996) provided details for EVA calculation (or variations of EVA, since Copeland refers to economic profit). O'Hanlon and Peasnell (1998) and Young (1997; 1999) discussed and explained the applicable use and cost of the potential accounting adjustments for EVA calculation. McConville (1994), Jackson, Mauboussin and Wolf (1996), Dierks and Patel (1997), Stewart (1998), Prober (2000), Ray (2001), and Grant (2003) promoted the usefulness of EVA as a financial reporting tool and described it as a vital measure of total factor productivity, one that reflects all the dimensions by which management can increase value. Managers of leading companies such as Coca Cola, Sprint Corporation, and Quaker Oats have also presented their encouraging aspects for the effectiveness of the EVA financial management system. Besides, there has been a widespread adoption of EVA by security analysts such as Credit Suisse, First Boston's and Goldman Sachs'. They prefer this model instead of the dividend discount approach (Abate, Grant and Stewart, 2004).

What makes EVA challenging and interesting to study, is its adoption as a performance measure and/or incentive compensation system of hundreds of companies in the US. Moreover, in recent years the EVA concept/system crossed oceans and made sense in many other countries. EVA figures have been largely promoted in countries such as the UK, Australia, Canada, Brazil, Germany, Mexico and France among others (Günther, Landrock and T. Muehe, 2000; Worthington and West, 2001). Ehrbar (1998) refers to the adoption of EVA by New Zealand state owned companies in order to be invigorated, while Worthington and West (2001) discuss the adoption of the EVA financial management system by companies in Australia.

Despite all positive and encouraging comments about EVA emphasised by its proponents, the empirical literature which came out provided mixed results for the usefulness of EVA in explaining stock returns. Studies focused on whether EVA is more highly associated with stock returns than other performance measures provided mixed and controversial results. For example, O'Byrne (1996), Uyemura, Kantor and Petit (1996), Milunovich and Tsuei (1996), Lehn and Makhija (1997), Herzberg (1998) and Forker and Powell (2004) provided positive results for the value relevance of EVA. Their findings supported the Stewart's (1991; 1999) claim for the superiority of EVA as a financial performance measure.

On the other hand, studies carried out by Peterson and Peterson (1996), Biddle, Bowen and Wallace (1997), Chen and Dodd (1997; 2001) and Turvey et al. (2000) did not provide encouraging results for the superiority of EVA compared to traditional accounting performance measures such as EPS, ROI and ROE. Many other studies have been conducted examining other parameters of EVA. Bacidore et al. (1997) examined an alternative option of invested capital (they used market values instead of book values to estimate the capital invested) and proposed the Refined EVA (REVA) as the proper representative of economic value added. Although their findings proved that REVA is preferable than EVA, a study carried out by Ferguson and Leistikow (1998) proved that it does not hold. Finally, Wallace (1997) and Lovata and Costigan (2002) examined the consequences of the adoption of the EVA financial management system.

### **Objective and Data Methodology**

The objective of present study was to measure the financial performance of Nifty 50 companies for the period of 2013 to 2017. The financial performance has been evaluated through Economic Value Added (EVA) and their correlation with Market Price of Share. The data have been collect from the national stock exchange website, respective company website and other sources.

**Data Analysis****Economic Value Added (EVA)**

The collected data have been analyzed with the help of Economic Value Added (EVA) were given below.

**Table: 1 Economic Value Added (EVA) for the period 2013 to 2017**

Sr. No.	Company name	2017	2016	2015	2014	2013
1.	ACC	-71.13	380.39	182.61	927.57	-0.95
2.	Ambuja Cement	-45.72	21.73	280.73	566.51	571.50
3.	Asian Paint	653.13	563.26	663.09	268.56	253.19
4.	Axis Bank	-14,247.28	-8,773.83	-7,350.68	-6,529.98	-5,626.91
5.	Bajaj Auto	2,119.78	2,670.89	1,184.99	176.13	331.03
6.	Bank of Baroda	-23,746.19	-12,688.77	-16,305.16	-10,000.74	-10,659.44
7.	BHEL	2,548.71	3,173.01	1,547.85	1,686.01	-326.78
8.	BPCL	-2,326.47	-1,259.46	-912.47	-2,563.29	-1,676.50
9.	Bharti Airtel	-2,524.12	1,515.29	3,415.92	4,415.61	1,072.51
10.	Cairn India	-5,113.06	-4,964.55	-5,542.61	-3,414.30	-8,135.87
11.	Cipla	170.40	177.54	468.79	331.12	0.30
12.	Coal India	1,620.05	2,100.08	1,414.91	1,393.65	576.78
13.	DLF	-3,940.95	-2,885.68	-3,201.41	-822.26	-1,749.60
14.	Dr. Ready	2.74	155.92	281.32	80.17	-326.97
15.	GAIL India	412.78	1,206.03	490.48	1,137.36	-1,094.38
16.	Grasim industries.	-143.21	195.89	974.87	561.85	-30.08
17.	HCL technologies.	744.93	278.66	110.23	589.19	-35.66
18.	HDFC Bank	-31,408.24	-10,997.58	-9,523.51	-9,794.67	-7,487.03
19.	Hero motocorp	1,446.11	754.00	1,030.43	876.24	575.00
20.	Hindalco Industries	-5,239.76	-5,065.31	-4,396.47	-882.46	-3,266.34
21.	HDFC	-9,879.26	-10,967.13	-7,977.92	-5,916.18	-12,612.65
22.	HUL	2,262.15	2,114.09	1,972.26	2,266.24	1,617.54
23.	ICICI Bank	-41,553.75	-33,711.32	-35,438.70	-38,465.30	-46,294.02
24.	IDFC	-4,336.64	-3,186.38	-2,472.57	-2,035.89	-2,700.08
25.	IndusInd Bank	-3,894.15	-2,467.30	-2,037.00	-2,053.87	-2,193.44
26.	Infosys	5,771.00	2,998.00	4,369.00	4,474.00	2,568.00
27.	ITC	3,507.57	2,881.81	2,342.93	1,938.91	523.51
28.	JP Associate	-3,728.85	-2,471.50	-1,830.66	-627.59	-1,875.85
29.	Jindal Steel & Power	-472.73	138.06	-472.20	560.46	-1,006.49
30.	Kotak Mahindra Bank	-4,253.13	-2,454.14	-2,020.63	-2,000.58	-2,557.46
31.	L & T	-1,920.44	-884.46	-84.57	1,319.76	-1,093.50
32.	Lupin	266.72	310.75	373.71	242.63	160.01

33.	Mahindra and Mahindra	548.19	763.13	599.02	153.64	30.99
34.	Maruti Suzuki	-683.20	384.21	923.43	258.66	-84.35
35.	NMDC	3,320.99	3,927.88	1,195.74	3,191.59	14.34
36.	NTPC	-3,268.81	-1,421.83	-2,881.75	187.34	-13,170.28
37.	ONGC	8,008.63	2,054.50	1,016.69	6,192.75	-5,817.83
38.	Power Grid Corporation	-1,959.42	-1,441.51	-2,032.78	-2,767.59	-4,807.82
39.	Punjab National Bank	-23,432.58	-14,537.20	-12,499.24	-22,362.99	-11,161.51
40.	Ranbaxy Laboratories	2,694.80	328.72	-10.80	-1,548.25	20.19
41.	Reliance Industries	-128.33	10,921.85	432.32	7,619.64	-4,013.35
42.	Reliance Infrastructure	-2,949.40	-2,283.10	-3,133.49	17.69	-55.61
43.	Sesa Goa	-1,333.18	1,133.68	597.00	1,454.74	677.59
44.	SBI	-1,05,395.91	-58,366.31	-54,937.97	-46,646.14	-44,943.33
45.	Sun Pharma	863.74	426.32	386.31	834.42	365.51
46.	TCS	7,117.39	4,836.97	3,383.80	3,320.72	2,128.76
47.	TATA Motor	-5,013.48	-3,724.98	-1,691.86	-832.98	-237.24
48.	TATA Power	-1,182.04	-900.42	-1,329.17	-378.04	-1,951.45
49.	TATA Steel	-6,275.53	-4,497.24	-4,834.71	119.37	-4,585.78
50.	UltraTech Cement	474.17	-107.32	393.06	494.85	274.01

It can be understood from the above table, there was no consistent pattern of economic value created by the Nifty 50 companies. It was changed from time to time i.e. negative to positive and vice-versa. So there was no symmetry in the EVA from the year 2012-13 to 2016-17.

The banking sector, such as Axis bank, Bank of baroda, HDFC bank, ICICI bank, IndusInd bank, SBI, Kotak Mahindra bank and Punjab national bank, these bank were having negative EVA. Because these banking companies have employed the capital investment huge compared to generated profit margin.

Apart from these banking companies, BPCL, Cairn india, DLF, Hindalco industries, IDFC, JP Associate, PowerGrid Corporation, NTPC, Tata power were having negative EVA. These companies earning capacity was lower than its capital employment. They posted lower amount profit through all financial year starting from 2012-13 to 2016-17. So it reflects that their ROI (return on investment) is much lower than cost of capital rose.

From the financial year 2012-13 to 2016-17, the companies like Asian paint, Bajaj auto, Heromoto Corp, HUL, Infosys, ITC, Lupin, NMDC, TCS and UltraTech Cement have consistently added economic value while all other companies did not create any wealth to their shareholders as per the EVA model because of high market return.

It means that these companies were able to generate higher amount than the cost of capital of raised capital from the market. And they did not compensate the investors only up to risk that they had taken for the investment but also they were able to pay the investors beyond their required rate of return in the investment.

From the entire table of EVA calculation, the highest growth in EVA has been recorded by NMDC from 14.34cr in 2012-13 to 3320.99cr in the year 2016-17. So ultimately is increased EVA by around 23056.7% by the amount 3306.65cr in 2016-17. The main cause behind this effect is huge reduction in weighted average cost of capital from 39.66% in 2012-13 to 16.16% in 2016-17. Simultaneously, in the 2012-13 its profit was 3250.98cr increased to 7265.39cr in 2016-17, increment in profit was 123.35% (4014.41cr) in 2016-17.

Apart from NMDC, the second highest growth in EVA has been recorded by ONGC from -5817.83cr in 2012-13 to 8008.63cr in the year 2016-17. So ultimately was increased EVA by around 237% by the amount 13826.45cr in 2016-17.

After that, TCS and ITC have posted increment in EVA by 4988.63cr and 2984.64cr respectively compare to 2012-13 to 2016-17. Here TCS has recorded the 234.35% (2128.76cr to 7117.39cr) increment and ITC has recorded around 570% (523.51cr to 3507.57cr) in 2016-17 compared to 2012-13.

The companies like TCS, Infosys have maintained the consistent EVA around four thousands crores throughout all the financial year from 2013 to 2017. Out of five year ranging from 2013 to 2017, in the financial year of 2014, only few companies were facing negative EVA. It was the most profitable year among all for all the nifty 50 companies.

### Correlation between Economic Value Added (EVA) and Market Price of Share (MPS)

The following table shows the correlation between EVA and MPS.

**Table: 2 Correlation between Economic Value Added & Market Price of Share**

ACC	-0.729	Infosys	0.432
Ambuja Cement	-0.859	ITC	0.152
Asian Paint	0.871	JP Associate	0.184
Axis Bank	-0.476	Jindal Steel & Power	-0.390
Bajaj Auto	0.553	Kotak Mahindra Bank	-0.082
Bank of Baroda	-0.571	L & T	-0.502
BHEL	-0.340	Lupin	0.678
BPCL	0.128	Mahindra and Mahindra	0.322
Bharti Airtel	0.216	Maruti Suzuki	0.144
Cairn India	0.010	NMDC	-0.787
Cipla	0.444	NTPC	-0.269
Coal India	0.345	ONGC	-0.584
DLF	0.197	Power Grid Corporation	0.555
Dr. Ready	0.451	Punjab National Bank	0.199
GAIL India	-0.314	Ranbaxy Laboratories	0.706
Grasim industries.	-0.113	Reliance Industries	-0.375
HCL technologies.	0.088	Reliance Infrastructure	-0.649
HDFC Bank	0.632	Sesa Goa	0.089
Hero motocorp	0.543	SBI	-0.350
Hindalco Industries	-0.786	Sun Pharma	-0.384
HDFC	-0.145	TCS	0.740
HUL	-0.710	TATA Motor	-0.151
ICICI Bank	0.331	TATA Power	-0.220
IDFC	-0.138	TATA Steel	-0.752
IndusInd Bank	-0.904	UltraTech Cement	-0.088

Out of all Nifty 50 companies, there 22 companies correlation are positive and remaining companies' correlation are negative between EVA & MPS.

The highest positive correlation has been posted by Asian Paint from 2012-13 to 2016-17 is 0.87. After that TCS has posted the correlation 0.74. Which indicate there was strong positive relationship between the Market Price of Share and EVA.

The companies having correlation more than 0.50 indicates strong positive relationship. Means that one variable i.e. Market Price per Share (MPS) is strongly increased with increase in another variable i.e Economic Value Added (EVA). Here, overall positive relationship reflects, if EVA is increased, MPS tends to be increase.

The Lowest correlation has been posted by IndusInd bank, from the financial year 2012-13 to 2016-17 is -0.90. After that Ambuja Cement has Posted -0.79 which reflects, there was strong negative relationship between Market Price per Share and EVA.

If Correlation falls below -0.50, it shows strong negative correlation. Means that EVA is increased, and then MPS tends to be decrease. Here on an average, all the companies 'the negative correlation was string falling between -0.30 to -0.70. Except few companies like Ultratech Cement -0.09, Tata Motor -0.15, Tata Power -0.22, Grasim Industries -0.11, IDFC and HDFC -0.14.

## Conclusion

The study reveals that there is no strong pattern of EVA of selected companies during the period except few like Hero Moto Corp, BHEL, Coal India, ITC, Infosys and TCS. In the study reveals that out of Nifty 50 companies, there 22 companies' correlations are positive and remaining companies' correlation are negative between EVA & MPS.

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